

# ITRAINONLINE MMTK

## ***Exercises: Radio Link Calculation***

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### **Exercise – Step 1**

Identify a relevant radio link project that is connected to the workshop location or your projects.

Point 1: \_\_\_\_\_ Point 2: \_\_\_\_\_

Distance: \_\_\_\_\_ Heights: \_\_\_\_\_

### **Exercise – Step 2**

If you don't know the distance, calculate it using a formula or online tools:

Point 1: Latitude \_\_\_\_\_ Longitude \_\_\_\_\_

Point 2: Latitude \_\_\_\_\_ Longitude \_\_\_\_\_

Distance: \_\_\_\_\_

### **Exercise – Step 3**

Based on the radio link distance, evaluate the Free Space Loss and discuss the possibilities of establishing a radio link. Discuss the requirements.

Discuss topology and all other factors – is a link realistic at all?

Base your discussion on the use of online and offline tools as needed.

What radio frequencies are suitable? What hardware is suitable?

Write a short summary of the situation (on the back of this sheet) and the chances of establishing a radio link.

If a link is unrealistic, try to find alternatives.

## Exercise – Step 4

If the project looks realistic, do the full link budget. Ask your instructor where needed. Comment what you do!

transmit power	_____	[dBm]	
cable + connector loss	_____	[dB]	
amplifier gain	_____	[dB]	
antenna gain	_____	[dBi]	
free space loss	_____	[dB]	
antenna gain	_____	[dBi]	
amplifier gain	_____	[dB]	
cable loss	_____	[dB]	
receiver sensitivity	_____	[dBm]	
<b>TOTAL</b>	_____	<b>[dB]</b>	<b>Your comment?</b>